EOS Aura Data Systems Working Group (DSWG) meeting minutes

28 February 2005

Pasadena Conference Center
Pasadena, CA

I want to thank upfront Larry Klein for providing notes that were the basis of these minutes. Also, Stan Scott has set up repositories for the viewgraphs that were presented. Links to these sites are supplied at the bottom of the minutes.

Scott Lewicki, Chair

Agenda:

HDF-EOS Aura File Format Guidelines
- Status Report - Cheryl Craig
- L3 Standards & use of Zonal Average data type - All

Earth Science Standards Process Group use of Aura Guidelines discussion - Richard Ullman & Cheryl Craig

EMD upcoming releases - Evelyn Nakamura
- XML formatted metadata and Synergy 4 & 5
- Proposal for scp DN distributions

Aura Science System Interfaces - Karen Michael
- New Aura Capabilities
- Operations Status
- Documentation Status

ECS report - Larry Klein & Abe Taaheri
- Updates and new capabilities - HEG, datapool interfaces, ORBSIM updates and usage
- HDFview demo

GES DAAC Atmospheric Composition Data and Information Services Center applications - Greg Leptoukh & James Johnson
- Subsetting, On-line analysis and tools, Visualization

Aura HDF-EOS Dataset Validator Tool (he5v) usage - Peter Leonard

Additional Topics - All - remaining time.
- ECS Toolkit and checksum issues - Peter Leonard & Bert van den Oord
- Ordering GMAO data - Greg Osterman
- Interfaces to Aura Validation Data Center

- Topics from last HDF Workshop.
- Use of HDF tools http://hdfeos.gsfc.nasa.gov/hdfeos/softwarelist.cfm
- EDG & MTMGW interfaces
- IDL's HDF5 interface status

Action Items:

No previous action items were reviewed.

Topics:

HDF-EOS Aura File Format Guidelines

Cheryl Craig

Latest official release of Guidelines will always be available at:☒

http://www.eos.ucar.edu/hirdls/HDFEOS_Aura_File_Format_Guidelines.doc
http://www.eos.ucar.edu/hirdls/HDFEOS_Aura_File_Format_Guidelines.pdf

Aura Guidelines changes since last Aura DSWG have been minor: some TES and HIRDLS updates to geolocation and data fields. OMI added “Slant Column” to VerticalCoordinate.

Toolkit incompatibility – Version 5.2.11 can’t read Version 5.2.12- produced files. No problems have been reported by users, however.

The GSFC DAAC had some problems with formats; a fix in the HDF-EOS5 library is required. OMI attributes in the files are not written according to documentation.

There have been no major problems sharing data across Aura instruments. The format is stable at present. It was noted that the implementation of Aura guidelines has contributed to application development efficiency. The development of the Aura subsetter at GSFC was cited as an example.

Extension of Aura File Format Guidelines to Level 3 data

David Cuddy

The extension uses the HDF-EOS Grid and Zonal Mean structures. There was discussion of the need for new attributes. Attributes needed for time of grid and orbit period. There is a need for a geolocation layer in the Grid structure like in Swath structures. A new HDF-EOS subroutine maybe needed, or it could be handled as a data layer.

Action Item: Scott Lewicki will set up a telecon to discuss L3 guidelines within the next 2 months. Goal is to add material to the Aura Guidelines document by the time of the next Aura DSWG in November.

Evolution of Aura File Format Guidelines into NASA Standards

Richard Ullman & Cheryl Craig

Discussion of Earth Science Working Groups to establish the Standards Process Group (SPG). A driving mandate of the SPG is to use community-developed rather than mandated standards. Communities already have standards. Wider use is needed. Interface compatibility is important.

More information on the SPG is available from http://spg.gsfc.nasa.gov/About/Overview
To subscribe to the Spg-announce mailing list:
Spg-announce@spg.gsfc.nasa.gov or go to
http://spg.gsfc.nasa.gov/mailman/listinfo/spg-announce

Standards are grown from practices that work. The standards development process was discussed. An RFC is issued for a proposed standard. A technical working group (TWG) is established for each RFC. For example this process was used for the OpeNDAP Membership in TWG is drawn from the standards process group.

Discussion of Aura standard applicability to a larger community. Scott – Aura users are a community, representing four instruments. Ullman – Can these standards be promoted to the next relevant mission? Future instruments that produce profiler or sounder data and intend to use HDF-EOS5 or HDF5 structures could benefit.

Action Item: Cheryl Craig and Scott Lewicki will pursue developing an RFC for the Aura Guidelines and identify a TWG to comment.

OMI asked about invitations to international groups for participation? Ullman- These standards are for NASA data, not international, like ESA data.

Scott Lewicki – Promoting Aura standards is good for advertising Aura data in general.

XML formatted metadata and Synergy releases

Evelyn Nakamura

Only ODL formatted metadata is distributed now. This is ‘Synergy 3’ mode. XML metadata is distributed in Synergy 4 mode. The DAAC is configurable to either mode.

In the next release, the Order Manager subsystem is modified to improve performance of the distribution function.

Question – Will Synergy 3 go away? Answer – No, because of legacy software associated with Synergy 3. Also, not all Synergy 3 features are in Synergy 4.

There will be an External Subsetter (in V0 Gateway) planned for release in 2006.

In the future, ODL or XML formatted metadata will be available by request.

There will be a review of XML features. The DAAC must configure unimplemented features as Synergy 3 or as an exception.

Scott Lewicki – what are the advantages of XML? Evelyn – Exchange protocols are better, but no known applications.

Question – How are distributed files named? The contents of DN are in the SIPS ICD.

Discussion of DN delivery. DNs will be pushed, not emailed.

David Cuddy - Don't want too many emails while the network is down.
Scott Lewicki – This needs more discussion. Where is the appropriate place to resolve protocols? In ICDs or Operations Agreements (OAs). Changing the ICDs requires an CCR. OMI wants this. It is better than email notifications. Scp is better

Evelyn – There is not connection to the toolkit in Datapool interfaces. The Datapool is dependent on particular implemented architecture. The toolkit is transportable.

Question on how to get data into Datapools. IT's can make specific data available to Datapool. This is done be configuring ESDTs

Aura Science System Interfaces

Karen Michael

Status of SIPS ICDs. All are baselined. Stan Scott handles all of the instrument teams ICDs. Status of active SIPS ICD CCRs and plans for future CCRs were discussed.

Status of requirement changes for Aura. Change of email notification to scp will be major impact. There was discussion of testing changes.

Aura Science Post Launch requirements. Planned for verification in L – L+1 year timeframe. Products originally planned for after L+1 year were placed in the inactive state in the Aura test database.

ECS Toolkit, HDF-EOS, and related applications status

Abe Taaheri

Discussion of recent major HDF-EOS5 and Toolkit additions/mods. One major change is Structural metadata buffer allocation from static to dynamic.

Issues to be resolved include test for equality in Toolkit for float/double values and the orbsim problem reported by HIRDLS.

Discussion of applications, including heconvert, HEG and HDFView. HEG converts EOSDIS data from HDF-EOS format to common Geographical Information System (GIS)-compatible formats.

Discussion of known problems. There were no major issues from the audience.

Scott Lewicki – When will HDF5 be supported in HEG? Larry – in Synergy 6 depending on budget (start Aug 05)
James Johnson – Is there subsetting in HDFView? Larry - no – it's a browse tool.
Scott Lewicki – How is testing going with Aura data? Abe – Testing is o.k. but some files are too large to download.

GES Atmospheric Composition Data and Information Services Center applications

Greg Leptoukh & James Johnson

Discussion of ACDISC portal implementation, features, tools. Value-added services: processing next to the data.

Envision ACDISC as an Atmospheric Composition specific, user driven, multi-sensor, on-line, easy access archive and distribution system employing data analysis and visualization, data mining, and other user requested techniques that facilitate science data usage.

Scott Lewicki - Does data have to be local to access functionality provided? Greg – No, data can be accessed with OpeNDAP.

James Johnson developed HDF5 subsetting tool for the Aura Validation Data Center (AVDC). This is based on the Aura File Format Guidelines. It is called HE5Subset and runs from the command line. Original Metadata/Attributes are retained and output files are in the same format.

Larry Klein – will subsetter work with many files, in batch mode? James – This currently works with some files, not tested on all.

Question – Is GMAO data supported by the subsetter? Answer – No, GMAO data is written in HDF-EOS 2, not HDF-EOS 5. The subsetter works on the latter format. The HEW subsetter is available at the DAAC, but wasn't discussed. James said that he wrote his subsetter at the same time as the HDF5–based HEW was being developed.

Scott Lewicki – Can metadata for subsetted files be standardized? The needs discussion with developers of subsetters. It was noted that OMI data is different due to presence of the external NOSE file.

Action to DSWG – Develop guidelines for the format of data product subsets.

Description of GES-DISC Interactive Online Visualization and Analysis Infrastructure (Giovanni). Web interfaces for modelers, global and regional trends researchers, teachers, students. Currently works with TRMM, MODIS aerosol, SeaWiFS and MODIS ocean-color, and TOMS atmospheric chemistry. Next is AIRS, then Aura instruments.

Discussion of parameter comparison tool, which can do statistics such as correlations in time/space. Larry – what statistics tools are used. Greg - GrADS.

Other discussion on data mining, subset on the fly and implementation of user algorithms

HDF-EOS Validator Tool (he5v) usage

Peter Leonard

Originally developed by Bob Bane at GSFC to validate the format of Aura Level 2 product files with respect to the HDF-EOS Aura File Format Guidelines. The tool compares an XML Product Format Specification file based on the Aura Guidelines with the actual HDF-EOS 5 Level 2 product file. Also useful as a QA tool.

The tool is not currently supported. This tool and other tools developed by the same group will be open-sourced.

Discussion of ECS Toolkit and Checksum problems

OMI found a problem with comparison for equality between reals. The code should have been written as the difference compared with a small number. Abe – We will fix this by the end of March.

The ECS checksum algorithm is not consistent. The checksum will be the same if the last 6 bytes of the file (aligned on an 8 byte boundary) differs. A Trouble Ticket will be written.

Use of IDL to write HDF_EOS 5 files

Cheryl Craig

The HRDLS group found a way to use IDL HDF5 calls to write HDF-EOS 5 files using a template. IT was again requested that the group pressure RSI for full HDF-EOS 5 support.

Scott asked about support for tools in HDFEOS server

Action – Which tools are currently open-source. What is the current level of support?

Adjourn.

Use the following address to access the first set of Aura DSWG charts and hand-outs from the 28 February 2005 meeting in Pasadena:

https://webdrive.gsfc.nasa.gov/longauth/500/Stanley.R.Scott.1/QiR4P4C39KUAAHLwj4
Use:

username = DSWG_1
password = Batch_1_of_2
to download the first set.

Use the following address to access the second set of Aura DSWG charts and hand-outs:

https://webdrive.gsfc.nasa.gov/longauth/500/Stanley.R.Scott.1/QiR6q4C39KUAABfVyQE
Use:

username = DSWG_2
password = Batch_2_of_2
to download the second set.

You have 30 days from 1 March 2005 to download the files

Thanks,
Scott